

ABSTRACT OF THE DISCLOSURE

A photo device condenses the bright spot on the display to project the spot light onto the projection plane, thereby projecting it onto photo detectors the projection plane. A counter counts the time from the time of a vertical sync signal, and supplies its output to AND gates. A correspondence detector brings bright spot display positions on the display at multiple times into correspondence with their projection positions on the photo device in accordance to recording time. An extrinsic parameter calculator calculates the 3-D translation and rotation of the photo device with respect to the bright spot scanning surface of the display from at least three sets of the bright spot display positions and their corresponding projection positions.

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